

What is claimed is:

1. A method for optically copying a packet, in which a packet in a subscriber access network based on a wavelength division multiplexing is broadcasted using an optical broadcast module disposed independently of an optical label exchange switch, the method comprising:

- (a) dividing the packet, which is received from an optical group exchange controlled by the optical label exchange switch, into a header and a payload;
- (b) applying the payload to an i-th port of the optical label exchange switch;
- (c) leading the payload to the optical broadcast module by controlling the optical label exchange switch so that when the header represents a label for broadcasting, a corresponding broadcasting port of the optical label exchange switch is set as an output port of the optical label exchange switch; and
- (d) reframing the header and the payload and transmitting the reframed header and the payload to a backbone network using the optical broadcast module.

2. The method of claim 1, wherein step (d) comprises:

- (d1) storing the payload in a buffer;
- (d2) outputting the payload and the header from the buffer according to transmission priority and generating a reframing packet;
- (d3) changing the reframing packet into optical signals having various wavelengths;
- (d4) demultiplexing the optical signals having various wavelengths so as to select only the optical signals having admitted wavelengths;
- (d5) filtering the demultiplexed optical signals so as to adjust the spectral width of the optical signals to ensure a sufficient transmission distance; and
- (d6) multiplexing and amplifying the filtered optical signals so as to transmit the signals to the backbone network.

3. A method for optically copying a packet, in which a packet in a subscriber access network based on a wavelength division multiplexing is multicasted using an optical broadcast module disposed independently of an optical label exchange switch, the method comprising:

- (a) dividing the packet, which is received from an optical group exchange controlled by the optical label exchange switch, into a header and a payload;

(b) applying the payload to an i-th port of the optical label exchange switch;
(c) leading the payload to the optical multicast module by controlling the optical label exchange switch so that when the header represents a label for multicasting, a corresponding multicasting port of the optical label exchange switch is set as an output port of the optical label exchange switch; and
(d) reframing the header and the payload and transmitting the reframed header and the payload to a backbone network using the optical multicast module.

4. The method of claim 3, wherein step (d) comprises:

(d1) storing the payload in a buffer;
(d2) outputting the payload and the header from the buffer according to transmission priority and generating a reframing packet;
(d3) changing the reframing packet into optical signals having various wavelengths;
(d4) demultiplexing the optical signals having various wavelengths so as to select only the optical signals having admitted wavelengths;
(d5) filtering the demultiplexed optical signals so as to adjust the spectral width of the optical signals to ensure a sufficient transmission distance;
(d6) passing the multicast-objected wavelength in the filtered optical signals and blocking remaining optical signals; and
(d7) multiplexing and amplifying the multicast-objected signal so as to transmit the signal to the backbone network.